TAEJUS YEE

Software Engineer | Computational Mathematics

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EDUCATION

University of California, Los Angeles | *BS, Mathematics of Computation* **2024**

EXPERIENCE

Optical and Embedded Systems Engineering Intern **Jun 2024 - Sep 2024**

Wireless Photonics, LLC *El Segundo, CA*

- Developed and deployed control software on Raspberry Pi to manage and synchronize communication between two free-space optical communication nodes.
- Conducted detailed simulations of the optical properties of free-space lasers to evaluate system performance under misalignments and manufacturing tolerances.
- Optimized signal quality by implementing a mathematical algorithm to enhance the robustness of the RSSI (Received Signal Strength Indicator) connection utilizing feedback control from a photodiode array.

Computer Vision Researcher **Nov 2022 - Sep 2024**

Jalali Lab UCLA *Los Angeles, CA*

- Engineered a low-light optimized pan-tilt-zoom (PTZ) camera tracking system, integrating advanced object detection, feedback control, and physical algorithm preprocessing; work accepted for poster presentation at NVIDIA's GPU Technology Conference (GTC) 2024.
- Accelerated Python implementations of proprietary algorithms developed at the Jalali Lab, providing a 50% increase in speed and a 70% decrease in memory usage by implementing multi-threading, leveraging GPU acceleration with CUDA, and manually allocating memory.
- Developed a time series prediction tool achieving 54% directional accuracy by leveraging cutting edge imaging techniques (spectrogram waveform decompositions) and AI/ML (vision transformers).

Summer Capstone Intern **Jun 2023 - Sep 2023**

California NanoSystems Institute, BASF VC *Los Angeles, CA*

- Developed a comprehensive investing framework to evaluate the market potential, scalability, and financial viability of early-stage startups.
- Collaborated with cross-functional team members to research the financial, legal, technological, and market aspects of a case study startup company.
- Delivered a final investment pitch to a senior BASF VC member, providing key investment recommendations.

PROJECTS

ETF Portfolio Strategy | *github.com/TaejusYee2001/Portfolio_Momentum_Strategy* 2023

- Python, NumPy, SciPy IBKR, Backtrader
- Designed a Python-based trading algorithm to rank ETFs from a predefined universe by momentum.
- Implemented rolling window Hurst analysis and back-tested on historical data.
- Optimized strategy parameters for improved returns, leveraging key performance metrics such as Sharpe ratio and drawdown analysis.

Social Media Automation Tool | *github.com/TaejusYee2001/TikTok-Bot* 2023

- Python, Selenium, OpenAI Whisper, FFmpeg, Docker, AWS
- Developed a web-scraping script utilizing Selenium and BeautifulSoup to collect text data from Reddit, effectively bypassing anti-bot protocols through robust pagination and automation techniques.
- Synthesized audio files and video subtitles using OpenAI's Whisper model, optimizing audio output for graceful handling of spelling errors and inappropriate content.
- Achieved over 1000 veiws on initial deployement, demonstrating high user engagement.

ACHIEVEMENTS

Research Poster Presenter at NVIDIA GPU Technology Conference 2024

Primary Developer and Administrator for the Jalali Lab's PhyCV-CUDA Repository 2023

SKILLS

Programming Languages: Python, R, SQL, C++, C, C# JavaScript, MATLAB, Bash, Julia

Technologies: Docker, Kubernetes, RESTful APIs, Git, OpenAI APIs, FFmpeg, Selenium, BeautifulSoup, AWS

Frameworks: TensorFlow, PyTorch, Scikit-learn, Flask, FastAPI, Pandas, NumPy, SciPy, OpenCV